10 APR 1984

MEMORANDUM

SUBJECT: Run-off From Active Portions of Hazardous Waste Management Units

FROM: John W. Skinner, Director
Office of Solid Waste (WH-562)

TO: David Wagoner, Director
Air and Waste Management Division
Region VII

This memo is in response to your memorandum, dated February 21, 1984, regarding the issue of whether run-off from the active portion of a hazardous waste management unit should be presumed hazardous unless proven otherwise. You indicate in your memo that your office has received differing interpretations from the Land Disposal Branch and the Waste Characterization Branch. Upon review, I find that each branch was responding to slightly different situations, and that there is no real conflict in interpretation.

This memo presents OSW's policy on management of precipitation run-off. Additional discussion of the rules and management scenarios is presented in the Appendix. The Appendix describes management of run-off from closed and inactive portions of the facility, and cites technical procedures for calculating run-off volume.

Policy on Active Portion Run-off

Under 40 CFR 261.3 (c) (2), precipitation run-off is not a hazardous waste. However, under the mixture rule set forth in 261.2 (a) (2) (ii) and (b) (2), the mixture of precipitation run-off with a listed hazardous waste is a hazardous waste, and its mixture with a characteristic hazardous waste would be presumed hazardous unless it is shown not to exhibit any characteristic of hazardousness. Since leachate from the treatment, storage, or disposal of hazardous waste is itself a hazardous waste (261.3 (c) (2)), the mixture of leachate and precipitation run-off is a hazardous waste. Run-off from active portions of land-based hazardous waste treatment, storage, and disposal units will almost inevitably consist in part of leachate and may, therefore, be presumed initially to be a hazardous waste. However, the owner/operator can overcome this presumption by demonstrating that the collected liquid consists only of "precipitation run-off."

Units used to hold mixtures of leachate and run-off that are not shown to be non-hazardous should be subject to applicable Part 264 permitting standards (i.e., Subpart K for surface impoundments, Subpart J for tanks, etc.). Run-off quality should be monitored.

Key Definitions

In order to apply the above policy to hazardous waste management units, it is important to understand several terms and the typical operation of active units.

- ◊ Run-off is defined in 40 CFR S260.10 as ". . .any rainwater, leachate, or other liquid that drains over land from any part of a facility."

- ◊ A facility is "… all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units . . ."

- ◊ Active portion ". . . means that portion of a facility where treatment, storage, or disposal operations are being or have been conducted after the effective date of Part 261 of this Chapter and which is not a closed portion . . ."

- ◊ Leachate is considered to be a hazardous waste under 261.3(c)(2). Leachate ". . . means any liquids including any suspended components in the liquid, that has percolated through or drained from hazardous waste."

- ◊ The essential distinction between leachate and run-off is that leachate results from liquids percolating through or draining from hazardous waste, while run-off is liquid that drains over land. Leachate, thus, is more likely to have solubilized substantial amounts of waste constituents. Precipitation run-off in contrast, may not have had sufficient contact with the waste to solubilized waste constituents.

Discussion

The apparent conflict in guidance that you encountered is related to the difference between active portion run-off and run-off from closed portions, where mixture with leachate does not occur. This difference is best understood by illustrating the sources and accumulation points of fluids in active landfills (please refer to Figure 1 in the Appendix). As you will notice, rain that drains over the active face of a trench landfill accumulates at the toe of this active face. Based on our experience with typical landfills, the fluids accumulating at this toe also contain leachate. Underlying lifts of waste containing drums, sludges, intermediate cover) can retard the vertical percolation of leachate, resulting in local or temporary "perched" conditions. This perched leachate seeps from the active face and accumulates in the same area as run-off from the active

face. Due to the mixture rule (261.3 (c) (2)), this active portion run-off becomes a hazardous waste.

Precipitation run-off that drains over closed and inactive portions of the facility (recall the definition of run-off in 260.10) has obviously not had the opportunity to mix with leachate, as has the run-off from active portions, and therefore is not a hazardous waste.

Naturally, should an applicant or owner/operator demonstrate that the run-off from the active portion of the facility has not had any opportunity to mix with leachate, the collected fluid would not be presumed a hazardous waste, the operator is then required to determine whether this fluid exhibits the characteristics of hazardous waste as a first step in managing this fluid in the manner required in the Parts 264 and 265 standards.

Please contact Ken Shuster, Chief of the Land Disposal Branch at FTS 382-3345, or Art Day at 382-4580 if additional information is needed.

Attachments

cc: John Lehman
Eileen Claussen
Bruce Weddle
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Regions I-VI, VIII-X

containment objective. The preamble states that ". . . there may be rare situations where the leachate or run-off from a pile of hazardous waste is not itself a hazardous waste . . ." (46 FR 2889).

Guidance on Permitting Standards

1. Unit Design

In its training programs to the Regional Offices and in the draft Permit Applicant's Guidance Manual for Hazardous Waste Land Treatment, Storage, and Disposal Facilities, this office has explained that the Part 264 standards for run-off control should be applied in the following ways:

- ◊ Run-off from active portions of units should generally be considered to be a hazardous waste, because it is presumed to contain leachate. Leachate is generally considered to be a hazardous waste under 261.3(c)(2). However, the permittee has the right to demonstrate that the collected liquid consists only of precipitation run-off (i.e., does not contain leachate) for which the mixture rule in 261.3 (b) (2) does not apply. This demonstration could be made through an analysis of the unit's design. This analysis should show that precipitation run-off from the active portion has had no opportunity to mix with leachate. Units used to hold run-off presumed to be hazardous should meet the applicable Part 264 permitting standards (i.e., Subpart K for surface impoundments, Subpart J for tanks, etc.). Run-off quality should be monitored.

- ◊ Run-off from fully closed (e.g., capped) units (except land treatment units) is not presumed to be a hazardous waste, because it has not drained through waste or mixed with leachate. This run-off need not be collected, but it should be managed in a manner designed to protect the final cover as stipulated in 264.228 (b) (4) and 264.310 (b) (5). It should be noted, however, that it is useful to monitor closed-area run-off quality to detect leachate seepage through the cap. Units used to hold collected closed area run-off need not meet the permitting standards associated with the unit type, unless the run-off is hazardous waste. Run-off from closed land treatment units should be collected and managed in the same way as active unit run-off.

- ◊ Run-off from portions of a facility that are not part of an active land treatment, storage, or disposal unit (undeveloped or unassociated areas) need not be collected in the run-off management systems required under 264.251(d), 264.273(d), 264.273(d), and 264.301(d).

- ◊ Run-off volume can be calculated using the methods in the U.S. Dept. of Agriculture - Soil Conservation Service, National Handbook 4.

- ◊ Collection and conveyance structure designs can be determined using the methods in the U.S.D.A. - SCS, National Engineering Handbook 5.

◊ The magnitude of the 24-hour, 25-year storm can be determined by using the data available in the National Oceanic and Atmospheric Administration. Technical Publication 40 with Regional revisions.

Of the three types of run-off from land disposal facilities (active area, closed area, and undeveloped/unassociated area), we are most concerned with active area control. Precipitation falling on exposed hazardous wastes can dissolve or transport waste constituents. At typical waste piles and landfills, precipitation and leachate are likely to mix at the toe of the active face or the low point of the trench floor. At land treatment units, precipitation and leachate mix readily in the active portions.

2. Unit Operation

The collection system must be emptied expeditiously after storms to maintain its capacity. The rate and extent of fluid removal are site-specific factors. It might not be necessary to completely drain the system as long as there is sufficient capacity to collect fluid from the 24-hour, 25-year storm. If the fluid is managed in a Subpart K surface impoundment, the impoundment must be designed to prevent overtopping.

The nature of fluid quality monitoring is also a site-specific matter. If the fluid is not presumed to be a hazardous waste (see above), monitoring should be conducted to determine whether it meets the definition of a hazardous waste. A number of practical problems arise in this type of monitoring. For example, the testing of the run-0off will be difficult because collected run-off cannot be managed easily in batch form. A storm may add new fluids from the active portion from the active portion to the collection area before a determination has been made on the quality of the original batch. In addition, if the run-off is found to be hazardous (after assuming it is non-hazardous), the owner or operator must transfer the fluid from the non-permitted collection basin to a permit unit. If the fluid is presumed to be a hazardous waste and managed in appropriate units, monitoring should be based on whatever information is needed to manage those units.

Interim Status Standards

The interim status standards for run-off management at existing facilities are found at 265.272(c) (land treatment units), 265.302 (b) (landfills), and 265.253 (waste piles). Note that surface impoundments must be designed to prevent overtopping (265.222). The standards for landfills and land treatment units require that run-off from active portions must be collected. If this run-off is a hazardous waste, it must be managed as a hazardous waste. If the leachate or run-off from a waste pile is a hazardous waste, then either the run-off must be collected and managed as a hazardous waste, or the pile must be protected from precipitation and run-on, and no liquids may be placed in the pile.

Run-off from all land disposal units, except land treatment units, that are closed under the Interim Status Standards need not be collected.